

~~Search History~~

STN  
(HCAPLUS, INSPEC, JAPIO, USPATFULL, INPADOC)  
5/28/06

(FILE 'HOME' ENTERED AT 23:40:22 ON 23 MAY 2006)

FILE 'HCAPLUS, INSPEC, JAPIO, USPATFULL, USPAT2, INPADOC' ENTERED AT  
23:40:51 ON 23 MAY 2006

L1 3132 S (OSF OR OXIDATION(W) INDUCED(W) STACKING(W) FAULT)  
L2 12887 S (COP OR CRYSTAL(W) ORIGINATED(W) PARTICLE)  
L3 6765 S (CRUCIBLE(8A) ROTAT? OR CRUCIBLE(8A) SPEED# OR CRUCIBLE(8A) RATE  
L4 15581 S (PULL?(8A) RATE#)  
L5 498473 S (OPPOSITE(10A) DIRECTION)  
L6 2353 S (AVERAG?) (8A) (ROTAT?(4A) SPEED#)

=> s 13 and 14 and 15 and 16

L7 5 L3 AND L4 AND L5 AND L6

=> d 17 1-5 abs, bib

L7 ANSWER 1 OF 5 USPATFULL on STN

AB A silicon single crystal ingot is **pulled** at a **pull rate** so that the interior of the ingot results in a perfect region in which agglomerates of interstitial silicon-type point defects and agglomerates of vacancy-type point defects are absent, while **rotating** a quartz **crucible** for storing a silicon melt at a predetermined **rotation** speed and rotating the ingot pulled from the silicon melt in the **opposite direction** to the **rotation** of the quartz **crucible** at a predetermined **rotation speed**. An **average rotation speed** CR.sub.TAV of the quartz **crucible** during the pulling of a top ingot portion is set to be faster than an **average rotation speed** CR.sub.TAV of the quartz **crucible** during the pulling of a bottom ingot portion of the silicon single crystal ingot.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2005:302437 USPATFULL

TI Method of manufacturing silicon single crystal and silicon single crystal manufactured by the method

IN Harada, Kazuhiro, Tokyo, JAPAN  
Suzuki, Yoji, Tokyo, JAPAN  
Abe, Hidenobu, Tokyo, JAPAN

PI ~~US 2005263063 A1 20051201~~  
~~AT US 2004-769367 A1 20040130 (10)~~

PRAI JP 2003-23148 20030131

DT Utility

FS APPLICATION

LREP REED SMITH, LLP, ATTN: PATENT RECORDS DEPARTMENT, 599 LEXINGTON AVENUE,  
29TH FLOOR, NEW YORK, NY, 10022-7650, US

CLMN Number of Claims: 18

ECL Exemplary Claim: 1

DRWN 6 Drawing Page(s)

LN.CNT 740

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L7 ANSWER 2 OF 5 USPATFULL on STN

AB Apparatus and methods for pulling a semiconductor crystal according to a Czochralski method are disclosed. The apparatus includes a crucible containing a melt, a crystal pulling mechanism which pulls the semiconductor crystal from the melt, a motor coupled to the crucible, and a control circuit for energizing the motor to **rotate** the **crucible** at a variable **speed**. The control circuit may energize the motor to **rotate** the **crucible** at a continuously varying acceleration and continuously varying **rotational** speed while the crystal pulling mechanism is pulling at least a portion of the semiconductor crystal from the melt in the crucible. The control circuit may also energize the motor to **rotate** the **crucible** at a **rotational speed** which monotonically increases and decreases. A method for pulling a semiconductor crystal is also disclosed which includes the

steps of performing a Fourier analysis on a periodic signal for variably **rotating a crucible**; generating a sine wave which corresponds to a fundamental Fourier frequency of the periodic signal; and energizing the **crucible** motor to **rotate** the **crucible** at a **rotational speed** which increases and decreases as a function of the generated sine wave. Other apparatus and methods for pulling crystals with the CZ method to achieve a desired oxygen concentration and gradient are also disclosed.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 1998:68278 USPATFULL  
TI Method for **rotating a crucible** of a crystal pulling machine  
IN Kimbel, Steven L., St. Charles, MO, United States  
Korb, Harold W., Town & Country, MO, United States  
Hall, Cynthia F., St. Peters, MO, United States  
PA MEMC Electric Materials, Inc., St. Peters, MO, United States (U.S. corporation)  
PI US 5766341 19980616  
AI US 1996-725861 19961004 (8)  
RLI Division of Ser. No. US 1995-488924, filed on 9 Jun 1995, now patented, Pat. No. US 5593498  
DT Utility  
FS Granted  
EXNAM Primary Examiner: Garrett, Felisa  
LREP Senniger, Powers, Leavitt & Roedel  
CLMN Number of Claims: 9  
ECL Exemplary Claim: 1  
DRWN 5 Drawing Figure(s); 3 Drawing Page(s)  
LN.CNT 604

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L7 ANSWER 3 OF 5 USPATFULL on STN

AB Apparatus and methods for pulling a semiconductor crystal according to a Czochralski method are disclosed. The apparatus includes a crucible containing a melt, a crystal pulling mechanism which pulls the semiconductor crystal from the melt, a motor coupled to the crucible, and a control circuit for energizing the motor to **rotate** the **crucible** at a variable **speed**. The control circuit may energize the motor to **rotate** the **crucible** at a continuously varying acceleration and continuously varying **rotational speed** while the crystal pulling mechanism is pulling at least a portion of the semiconductor crystal from the melt in the crucible. The control circuit may also energize the motor to **rotate** the **crucible** at a **rotational speed** which monotonically increases and decreases. A method for pulling a semiconductor crystal is also disclosed which includes the steps of performing a Fourier analysis on a periodic signal for variably **rotating a crucible**; generating a sine wave which corresponds to a fundamental Fourier frequency of the periodic signal; and energizing the **crucible** motor to **rotate** the **crucible** at a **rotational speed** which increases and decreases as a function of the generated sine wave. Other apparatus and methods for pulling crystals with the CZ method to achieve a desired oxygen concentration and gradient are also disclosed.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 97:3351 USPATFULL  
TI Apparatus for **rotating a crucible** of a crystal pulling machine  
IN Kimbel, Steven L., St. Charles, MO, United States  
Korb, Harold W., Town & Country, MO, United States  
Hall, Cynthia F., St. Peters, MO, United States  
PA MEMC Electronic Materials, Inc., St. Peters, MO, United States (U.S. corporation)  
PI US 5593498 19970114  
AI US 1995-488924 19950609 (8)  
DT Utility  
FS Granted

EXNAM Primary Examiner: Nguyen, Nam; Assistant Examiner: Garrett, Felisa  
LREP Senniger, Powers, Leavitt & Roedel  
CLMN Number of Claims: 15  
ECL Exemplary Claim: 1  
DRWN 5 Drawing Figure(s); 3 Drawing Page(s)  
LN.CNT 621  
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L7 ANSWER 4 OF 5 USPATFULL on STN  
AB An improved method of growing silicon crystals by the Czochralski method to obtain a desired oxygen concentration level with both axial and radial uniformity. A crucible is located within a heater to achieve a given temperature profile which is related to the oxygen concentration, and then raised and rotated at an increasing speed together with a high crystal rotation rate to achieve the uniformity.

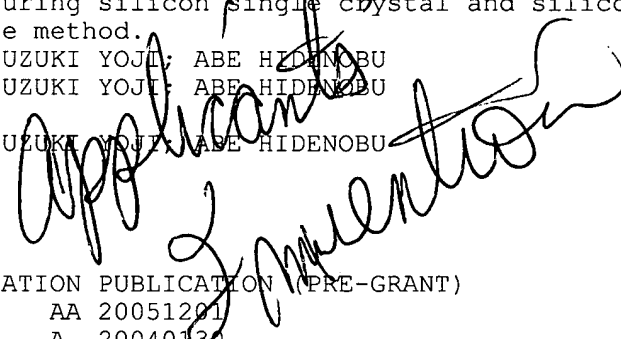
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 85:22231 USPATFULL  
TI Method of controlling oxygen content and distribution in grown silicon crystals  
IN Ghosh, Hitendra, Bloomfield Hills, MI, United States  
Murgai, Ashok, Wappingers Falls, NY, United States  
Westdorp, Wolfgang A., Hopewell Junction, NY, United States  
PA International Business Machines Corporation, Armonk, NY, United States (U.S. corporation)  
PI US 4511428 19850416  
AI US 1982-396986 19820709 (6)

DT Utility  
FS Granted  
EXNAM Primary Examiner: Lacey, David L.  
LREP Sandt, Robert E.  
CLMN Number of Claims: 11  
ECL Exemplary Claim: 1  
DRWN 1 Drawing Figure(s); 1 Drawing Page(s)  
LN.CNT 524  
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L7 ANSWER 5 OF 5 INPADOC COPYRIGHT 2006 EPO on STN

LEVEL 1  
AN 288352007 INPADOC ED 20051208 EW 200549 UP 20051208 UW 200549  
TI Method of manufacturing silicon single crystal and silicon single crystal manufactured by the method.  
IN HARADA KAZUHIRO; SUZUKI YOJI; ABE HIDENOBU  
INS HARADA KAZUHIRO; SUZUKI YOJI; ABE HIDENOBU  
INA JP; JP; JP  
PAS HARADA KAZUHIRO; SUZUKI YOJI; ABE HIDENOBU  
PAA JP; JP; JP  
TL English  
LA English  
DT Patent  
PIT USAA PATENT APPLICATION PUBLICATION (PRE-GRANT)  
PI US 2005263063 AA 20051201  
AI US 2004-769367 A 20040130  
PRAI JP 2003-23148 A 20030131 (EDPR 20041001)



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=> d his

(FILE 'HOME' ENTERED AT 00:26:03 ON 24 MAY 2006)

FILE 'HCAPLUS, INSPEC, JAPIO, USPATFULL, USPAT2, INPADOC' ENTERED AT  
00:26:48 ON 24 MAY 2006

L1 3132 S (OSF OR OXIDATION(W) INDUCED(W) STACKING(W) FAULT)  
L2 12887 S (COP OR CRYSTAL(W) ORIGINATED(W) PARTICLE)  
L3 6765 S (CRUCIBLE(8A) ROTAT? OR CRUCIBLE(8A) SPEED# OR CRUCIBLE(8A) RATE  
L4 17555 S (PULL?(10A) RATE#)  
L5 603090 S (OPPOSITE(8A) DIRECTION#)  
L6 2495 S (AVERAG?) (8A) (ROTAT?(6A) SPEED#)  
L7 60228 S (AGGLOMERATE# OR IMPURIT? OR DOPANT#) (8A) (DECREAS? OR LESS? O

=> s 13 and 14 and 16 and 17

L8 2 L3 AND L4 AND L6 AND L7

=> d 18 1-2 abs,bib

L8 ANSWER 1 OF 2 USPATFULL on STN

AB A silicon single crystal ingot is **pulled** at a **pull rate** so that the interior of the ingot results in a perfect region in which agglomerates of interstitial silicon-type point defects and **agglomerates** of vacancy-type point defects are **absent**, while **rotating** a quartz **crucible** for storing a silicon melt at a predetermined **rotation** speed and rotating the ingot pulled from the silicon melt in the opposite direction to the **rotation** of the quartz **crucible** at a predetermined **rotation speed**. An **average rotation speed** CR.sub.TAV of the quartz **crucible** during the pulling of a top ingot portion is set to be faster than an **average rotation speed** CR.sub.TAV of the quartz **crucible** during the pulling of a bottom ingot portion of the silicon single crystal ingot.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2005:302437 USPATFULL  
TI Method of manufacturing silicon single crystal and silicon single crystal manufactured by the method  
IN Harada, Kazuhiro, Tokyo, JAPAN  
Suzuki, Yoji, Tokyo, JAPAN  
Abe, Hidenobu, Tokyo, JAPAN  
PI US 2005263063 A1 20051201  
AI US 2004-769367 A1 20040130 (10)  
PRAI JP 2003-23148 20030131  
DT Utility  
FS APPLICATION  
LREP REED SMITH, LLP, ATTN: PATENT RECORDS DEPARTMENT, 599 LEXINGTON AVENUE, 29TH FLOOR, NEW YORK, NY, 10022-7650, US  
CLMN Number of Claims: 18  
ECL Exemplary Claim: 1  
DRWN 6 Drawing Page(s)  
LN.CNT 740

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 2 OF 2 INPADOC COPYRIGHT 2006 EPO on STN

LEVEL 1

AN 288352007 INPADOC ED 20051208 EW 200549 UP 20051208 UW 200549  
TI Method of manufacturing silicon single crystal and silicon single crystal manufactured by the method.  
IN HARADA KAZUHIRO; SUZUKI YOJI; ABE HIDENOBU  
INS HARADA KAZUHIRO; SUZUKI YOJI; ABE HIDENOBU  
INA JP; JP; JP  
PAS HARADA KAZUHIRO; SUZUKI YOJI; ABE HIDENOBU  
PAA JP; JP; JP  
TL English  
LA English  
DT Patent

PIT	USAA PATENT APPLICATION PUBLICATION (PRE-GRANT)		
PI	US 2005263063	AA 20051201	
AI	US 2004-769367	A 20040130	
PRAI	JP 2003-23148	A 20030131	(EDPR 20041001)

=>

Day : Tuesday  
Date: 5/23/2006


**PALM INTRANET**

Time: 23:07:22

**Inventor Name Search Result**

Your Search was:

Last Name = HARADA

First Name = KAZUHIRO

Application#	Patent#	Status	Date Filed	Title	Inventor Name
<a href="#">06436856</a>	<a href="#">4508251</a>	150	10/26/1982	CABLE PULLING/FEEDING APPARATUS	HARADA, KAZUHIRO
<a href="#">08985825</a>	<a href="#">5877934</a>	150	12/05/1997	CERAMIC COMPOSITION AND MULTILAYER CERAMIC CAPACITOR MADE THEREFROM	HARADA, KAZUHIRO
<a href="#">09028403</a>	<a href="#">6008981</a>	150	02/24/1998	MONOLITHIC CERAMIC CAPACITOR	HARADA, KAZUHIRO
<a href="#">09287710</a>	<a href="#">6356037</a>	150	04/07/1999	DIELECTRIC CERAMIC AND A CAPACITOR USING THE SAME	HARADA, KAZUHIRO
<a href="#">09467998</a>	<a href="#">6380118</a>	150	12/20/1999	NONLINEAR DIELECTRIC CERAMIC, PULSE GENERATING CAPACITOR, HIGH-PRESSURE VAPOR DISCHARGE LAMP CIRCUIT, AND HIGH-PRESSURE VAPOR DISCHARGE LAMP	HARADA, KAZUHIRO
<a href="#">09644183</a>	<a href="#">6379460</a>	150	08/23/2000	THERMAL SHIELD DEVICE AND CRYSTAL-PULLING APPARATUS USING THE SAME	HARADA, KAZUHIRO
<a href="#">09718659</a>	Not Issued	161	11/22/2000	Silicon wafer and method for manufacturing the same	HARADA, KAZUHIRO
<a href="#">09987691</a>	<a href="#">6650522</a>	150	11/15/2001	SEMICONDUCTOR RELAY SYSTEM AND METHOD FOR CONTROLLING THE SEMICONDUCTOR RELAY SYSTEM	HARADA, KAZUHIRO
<a href="#">10239784</a>	<a href="#">6671192</a>	150	03/31/2003	POWER APPARATUS	HARADA, KAZUHIRO
<a href="#">10527566</a>	Not Issued	25	01/06/2006	Heat shielding member of silicon single crystal pulling system	HARADA, KAZUHIRO

<a href="#">10561820</a>	Not Issued	19	01/01/0001	Silicon single crystal pulling method	HARADA, KAZUHIRO
<a href="#">10784411</a>	Not Issued	95	02/23/2004	METHOD OF IDENTIFYING DEFECT DISTRIBUTION IN SILICON SINGLE CRYSTAL INGOT	HARADA, KAZUHIRO
<a href="#">11247168</a>	Not Issued	20	10/12/2005	Electric blower	HARADA, KAZUHIRO

**Inventor Search Completed: No Records to Display.**

<b>Search Another: Inventor</b>	<b>Last Name</b>	<b>First Name</b>	<input type="button" value="Search"/>
	<input type="text" value="Harada"/>	<input type="text" value="Kazuhiro"/>	

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Day : Tuesday  
Date: 5/23/2006


**PALM INTRANET**

Time: 23:07:50

**Inventor Name Search Result**

Your Search was:

Last Name = SUZUKI

First Name = YOJI

Application#	Patent#	Status	Date Filed	Title	Inventor Name
<u>06427039</u>	4500639	150	09/29/1982	CULTURING BOULETELLA IN MEDIA CONTAINING ETHERIFIED CYCLODEXTRIN	SUZUKI, YOJI
<u>06591169</u>	Not Issued	161	03/19/1984	METHOD FOR THE PRODUCTION OF HA FRACTION CONTAINING PROTECTIVE ANTIGENS OF BORDETELLA PERTUSSIS AND PERTUSSIS VACCINE	SUZUKI, YOJI
<u>06800634</u>	Not Issued	166	11/05/1985	CEPHALOSPORIN DERIVATIVE, PROCESS FOR PRODUCTION THEREOF AND PHARMACEUTIAL USE THEREOF	SUZUKI, YOJI
<u>06817946</u>	4668782	250	12/17/1985	AN ANHYDROUS CRYSTALLINE OR CRYSTALLINE HEMIHYDRATE MONOHYDRATE OR TRIHYDRATE OF CEPHALOSPORIN DERIVATIVE	SUZUKI, YOJI
<u>06874670</u>	4687738	150	06/16/1986	METHOD FOR THE PRODUCTION OF HA FRACTION CONTAINING PROTECTIVE ANTIGENS OF BORDETELLA PERTUSSIS AND PERTUSSIS VACCINE	SUZUKI, YOJI
<u>07205598</u>	Not Issued	164	11/05/1987	3-(1-AZABICYCLO)-METHYL-CEPHALOSPORIN COMPOUNDS	SUZUKI, YOJI
<u>07295724</u>	5116942	150	12/02/1988	PROTEIN HAVING AN INFLAMMATORY	SUZUKI, YOJI



				PHOSPHOLIPASE A2 INHIBITORY ACTIVITY	
<u>07362855</u>	<u>5153308</u>	150	06/07/1989	S-SULFONATED CALCITONIN DERIVATIVES	SUZUKI, YOJI
<u>07391595</u>	Not Issued	161	07/31/1989	CEPHALOSPORIN COMPOUNDS OR THEIR SALTS, PROCESS FOR PRODUCTION OF SAME AND THEIR PHARMACEUTICAL COMPOSITIONS	SUZUKI, YOJI
<u>07391616</u>	Not Issued	161	07/31/1989	CEPHALOSPORIN COMPOUNDS OR THEIR SALTS, PROCESS FOR PRODUCTION OF SAME AND THEIR PHARMACEUTICAL COMPOSITIONS	SUZUKI, YOJI
<u>07415203</u>	Not Issued	161	08/24/1989	NOVEL TYPE OF HUMAN PHOSPHOLIPASE A2 AND ITS FRAGMENT PEPTIDE	SUZUKI, YOJI
<u>07671803</u>	Not Issued	166	05/31/1991	PROTEIN INHIBITORS OF PHOSPHOLIPASE A2 PURIFIED FROM INFLAMMATORY SITES, PRODUCTION PROCESS AND GENE THEREFOR	SUZUKI, YOJI
<u>07775932</u>	Not Issued	166	10/25/1991	METHOD OF SELECTING AND RECOVERING GENE RECOMBINANT ANIMAL CELLS	SUZUKI, YOJI
<u>07852169</u>	Not Issued	166	04/03/1992	PLASMID AND MICROBIAL CELL FOR PRODUCTION OF AN INHIBITORY PROTEIN FOR PHOSPHOLIPASE A2 FROM INFLAMMATORY SITES, AND THE PRODUCTION AND USE OF SAID PROTEIN	SUZUKI, YOJI
<u>08047379</u>	<u>5344764</u>	150	04/16/1993	PROTEIN INHIBITORS OF PHOSPHOLIPASE A2 PURIFIED FROM INFLAMMATORY SITES AND PRODUCTION PROCESS	SUZUKI, YOJI
<u>08078486</u>	Not Issued	161	06/17/1993	METHOD OF SELECTING AND RECOVERING GENE RECOMBINANT ANIMALS CELLS	SUZUKI, YOJI
<u>08110205</u>	Not Issued	161	08/23/1993	PLASMID AND MICROBIAL CELL FOR PRODUCTION OF AN INHIBITORY PROTEIN FOR PHOSPHOLIPASE A2 FROM	SUZUKI, YOJI

				INFLAMMATORY SITES, AND USE OF SAID PROTEIN	
<u>08251249</u>	<u>5544191</u>	150	05/31/1994	METAL VAPOR LASER CAPABLE OF COLD OPERATION	SUZUKI, YOJI
<u>08355481</u>	<u>5919713</u>	150	12/14/1994	SEMICONDUCTOR DEVICE AND METHOD OF MAKING	SUZUKI, YOJI
<u>09270843</u>	<u>6455945</u>	150	03/18/1999	SEMICONDUCTOR DEVICE HAVING A FRAGMENT OF A CONNECTION PART PROVIDED ON AT LEAST ONE LATERAL EDGE FOR MECHANICALLY CONNECTING TO ADJACENT SEMICONDUCTOR CHIPS	SUZUKI, YOJI
<u>09578271</u>	<u>6463195</u>	150	05/25/2000	METHOD OF MANUFACTURING POLARIZATION- MAINTAINING OPTICAL FIBER COUPLER	SUZUKI, YOJI
<u>09644183</u>	<u>6379460</u>	150	08/23/2000	THERMAL SHIELD DEVICE AND CRYSTAL-PULLING APPARATUS USING THE SAME	SUZUKI, YOJI
<u>09694163</u>	<u>6428619</u>	150	10/23/2000	SILICON WAFER, AND HEAT TREATMENT METHOD OF THE SAME AND THE HEAT- TREATED SILICON WAFER	SUZUKI, YOJI
<u>09945622</u>	<u>6472738</u>	150	09/05/2001	COMPOUND SEMICONDUCTOR DEVICE	SUZUKI, YOJI
<u>09985488</u>	<u>6627714</u>	150	11/05/2001	METHOD FOR PRODUCING AN OLEFIN TYPE COPOLYMER HAVING A CYCLIC STRUCTURE	SUZUKI, YOJI
<u>10162012</u>	<u>6682597</u>	150	06/03/2002	SILICON WAFER, AND HEAT TREATMENT METHOD OF THE SAME AND THE HEAT- TREATED SILICON WAFER	SUZUKI, YOJI
<u>10301816</u>	<u>6930334</u>	150	11/22/2002	HIGH FREQUENCY SEMICONDUCTOR DEVICE	SUZUKI, YOJI
<u>10527566</u>	Not Issued	25	01/06/2006	Heat shielding member of silicon single crystal pulling system	SUZUKI, YOJI

Inventor Search Completed: No Records to Display.

Search Another: Inventor  Last Name

First Name

Day : Tuesday  
Date: 5/23/2006

Time: 23:08:15



## Inventor Name Search Result

Your Search was:

Last Name = ABE

First Name = HIDENOBU

Application#	Patent#	Status	Date Filed	Title	Inventor Name
10527566	Not Issued	25	01/06/2006	Heat shielding member of silicon single crystal pulling system	ABE, HIDENOBU

Inventor Search Completed: No Records to Display.

Search Another: Inventor

Last Name	First Name	
<input type="text" value="Abe"/>	<input type="text" value="Hidenobu"/>	<input type="button" value="Search"/>

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